

Mr. Robert M. Clark
Guardian Automotive Trim, Inc.
P.O. Box 5109
Evansville, IN 47716-5109

Re: 163-10592
First Significant Source Modification to
Part 70 No.: T163-6502-00017

Dear Mr. Clark:

Guardian Automotive Trim, Inc. was issued Part 70 operating permit T163-6502-00017 on January 19, 1999 for an automotive decorative trim coating operation. An application to modify the source was received on February 5, 1999. Pursuant to the provisions of 326 IAC 2-7-10.5, the following emission units are approved for construction at the source:

The modification consists of adding an additional automotive decorative trim coating operation consisting of the following equipment:

- (a) One (1) Department 23 high gloss robotic spray coating booth (Adhesion Promoter Booth), identified as 23-13B, coating plastic parts, constructed in 1999, consisting of a spray application system (HVLP, its equivalent or better (e.g., electrostatic)), using water back booths of Particulate Matter control, exhausting to one (1) stack (23-13B). This new booth will be added to existing Department 23 high gloss robotic spray coating line (U23-1).
- (b) Four (4) new application guns (HVLP, its equivalent or better (e.g., electrostatic)) and four (4) new water back booths for particulate matter control to replace the application guns and the water back booths in Department 23 high gloss robotic spray coating line (U23-1).

The following construction conditions are applicable to the proposed project:

General Construction Conditions

- 1. The data and information supplied with the application shall be considered part of this permit. Prior to any proposed change in construction which may affect the potential to emit (PTE) of the proposed project, the change must be approved by the Office of Air Management (OAM).
- 2. This approval to construct does not relieve the permittee of the responsibility to comply with the provisions of the Indiana Environmental Management Law (IC 13-11 through 20; 13-22 through 13-25; and 13-30), the Air Pollution Control Law (IC 13-17) and the rules promulgated thereunder, as well as other applicable local, state, and federal requirements.

Effective Date of the Permit

- 3. That pursuant to IC 13-15-5-3, this permit becomes effective upon its issuance.
- 4. That pursuant to 326 IAC 2-1-9 (Revocation), the Commissioner may revoke this permit if construction is not commenced within eighteen (18) months after receipt of this approval or if construction is suspended for a continuous period of one (1) year or more.

5. All requirements and conditions of this construction approval shall remain in effect unless modified in a manner consistent with procedures established pursuant to 326 IAC 2.

The proposed operating conditions applicable to these emission units are attached to this Source Modification approval. These proposed operating conditions shall be incorporated into the Part 70 operating permit as an administrative amendment in accordance with 326 IAC 2-7-10.5(l)(1) and 326 IAC 2-7-11.

This decision is subject to the Indiana Administrative Orders and Procedures Act - IC 4-21.5-3-5. If you have any questions on this matter, please contact Yvette de los Angeles, c/o OAM, 100 North Senate Avenue, P.O. Box 6015, Indianapolis, Indiana, 46206-6015, or call at (800) 451-6027, press 0 and ask for Duane Van Laningham or extension (3-6878) or dial (973) 575-2555, extension 3216.

Sincerely,

Paul Dubenetzky, Chief
Permits Branch
Office of Air Management

Attachments
YD/EVP

cc: File - Vanderburgh County
U.S. EPA, Region V
City of Evansville EPA
Southwest Regional Office
Air Compliance Section Inspector - Dave Holder
Compliance Data Section - Jerri Curless
Administrative and Development - Janet Mobley
Technical Support and Modeling - Nancy Landau

**PART 70 OPERATING PERMIT
OFFICE OF AIR MANAGEMENT
and
CITY OF EVANSVILLE EPA**

**Guardian Automotive Trim, Inc.
601 North Congress Avenue
Evansville, Indiana 47715**

(herein known as the Permittee) is hereby authorized to operate subject to the conditions contained herein, the source described in Section A (Source Summary) of this permit.

This permit is issued in accordance with 326 IAC 2 and 40 CFR Part 70 Appendix A and contains the conditions and provisions specified in 326 IAC 2-7 and 326 IAC 2-1-3.2 as required by 42 U.S.C. 7401, et. seq. (Clean Air Act as amended by the 1990 Clean Air Act Amendments), 40 CFR Part 70.6, IC 13-15 and IC 13-17.

Operation Permit No.: T163-6502-00017	
Original Issued by: Janet G. McCabe, Assistant Commissioner Office of Air Management	Issuance Date: January 19, 1999
First Significant Source Modification: 163-10592	Pages Affected: 3, 3a, 4, 41a, 41b, 41c
Issued by: Paul Dubenetzky, Branch Chief Office of Air Management	Issuance Date:

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SECTION A

SOURCE SUMMARY

This permit is based on information requested by the Indiana Department of Environmental Management (IDEM), Office of Air Management (OAM) and City of Evansville EPA. The information describing the source contained in conditions A.1 through A.3 is descriptive information and does not constitute enforceable conditions. However, the Permittee should be aware that a physical change or a change in the method of operation that may render this descriptive information obsolete or inaccurate may trigger requirements for the Permittee to obtain additional permits or seek modification of this permit pursuant to 326 IAC 2, or change other applicable requirements presented in the permit application.

A.1 General Information [326 IAC 2-7-4(c)] [326 IAC 2-7-5(15)]

The Permittee owns and operates a stationary automotive decorative trim coating operation.

Responsible Official: Robert M. Clark
Source Address: 601 North Congress Avenue, Evansville, Indiana 47715
Mailing Address: P.O. Box 5109, Evansville, Indiana 47716-5109
SIC Code: 3089
County Location: Vanderburgh
County Status: Attainment for all criteria pollutants
Source Status: Part 70 Permit Program
Major Source, under PSD Rules;
Major Source, Section 112 of the Clean Air Act

A.2 Emission Units and Pollution Control Equipment Summary [326 IAC 2-7-4(c)(3)] [326 IAC 2-7-5(15)]

This stationary source consists of the following emission units and pollution control devices:

- (1) One (1) Department 23 high gloss robotic spray coating line, coating plastic parts, constructed in March, 1994, identified as U23-1, consisting of five (5) spray booths (HVLP, its equivalent or better (e.g., electrostatic)) (23-5B, 23-6B, 23-7B, 23-8B, and 23-13B), each using water back booths for Particulate Matter (PM) control, each exhausting to one (1) stack (23-5B, 23-6B, 23-7B, 23-8B, and 23-13B);
- (2) One (1) Department 23 low gloss robotic spray coating line, coating plastic parts, constructed in March, 1994, identified as U23-2, consisting of four (4) High Volume, Low Pressure (HVLP) spray booths (23-9B, 23-10B, 23-11B and 23-12B), each using water back booths for Particulate Matter (PM) control, each exhausting to one (1) stack (23-9B, 23-10B, 23-11B, 23-12B and 23-1H);
- (3) One (1) Department 13 (formerly Department 14) air atomization hand spray coating booth, coating plastic parts, constructed before 1980, no identification number assigned (formerly 14-1B), using fabric filters for Particulate Matter (PM) control, exhausting to one (1) stack (no identification number assigned (formerly 14-1B)) and three (3) Department 13 automatic paint machines, identified as 13-7, 13-8, and 13-9, coating plastic parts, constructed before 1980, using fabric filters for Particulate Matter (PM) control, each exhausting to one (1) stack (13-1A, 13-2A, and 13-3A);
- (4) One (1) Department 13 hand spray coating line, coating plastic parts, constructed before 1980, identified as U13-1, consisting of three (3) air atomization spray booths (13-7B, 13-8B and 13-9B), spray booth 13-7B using a water back booth for Particulate Matter (PM) control and spray booths 13-8B and 13-9B using fabric filters for Particulate Matter (PM) control, each exhausting to one (1) stack (13-7B, 13-8B and 13-9B);
- (5) One (1) Department 13 air atomization hand spray coating booth, coating plastic parts, constructed before 1980, identified as U13-2, using a water back booth for Particulate Matter (PM) control, exhausting to one (1) stack (13-6B);

SECTION D.4

FACILITY OPERATION CONDITIONS

Facility Description [326 IAC 2-7-5(15)]

- (a) One (1) Department 23 high gloss robotic spray coating booth (Adhesion Promoter Booth), identified as 23-13B, coating plastic parts, constructed in 1999, consisting of a spray application system (HVLP, its equivalent or better (e.g., electrostatic)), using water back booths of Particulate Matter control, exhausting to one (1) stack (23-13B). This new booth will be added to existing Department 23 high gloss robotic spray coating line (U23-1).
- (b) Four (4) new application guns (HVLP, its equivalent or better (e.g., electrostatic)) and four (4) new water back booths for particulate matter control to replace the application guns and the water back booths in Department 23 high gloss robotic spray coating line (U23-1).

Emission Limitations and Standards [326 IAC 2-7-5(1)]

D.4.1 Volatile Organic Compounds (VOC) [326 IAC 8-1-6]

- (a) Pursuant to 326 IAC 8-1-6 (General Reduction Requirements, the Best Available Control Technology (BACT) shall consist of the following for the one (1) Department 23 high gloss robotic spray coating booth (23-13B):
 - (1) The use of high volume, low pressure (HVLP) applicators, its equivalent or better (e.g., electrostatic);
 - (2) The use of the solventless mask washers;
 - (3) The use of solventless boothcoat; and
 - (4) An annual report must be submitted to the Evansville Environmental Protection Agency on the feasibility of the use of water-based coatings or any other method of reducing VOC emissions.

D.4.2 PSD Minor Limit [326 IAC 2-2] [40 CFR 52.21]

Pursuant to 326 IAC 2-2 (Prevention of Significant Deterioration), the following requirements will make the one (1) Department 23 high gloss robotic spray coating line and the one (1) Department 23 low gloss robotic spray coating line not subject to the requirements of 326 IAC 2-2 (Prevention of Significant Deterioration):

- (a) The amount of non-acetone solvent, including thinners and cleanup solvents, delivered to the applicators shall be limited to 246 tons per 12 month consecutive period, rolled on a monthly basis.

D.4.3 Particulate Matter (PM) [326 IAC 6-3-2(c)]

Pursuant to 326 IAC 6-3-2 (Process Operations) the particulate matter (PM) from the one (1) Department 23 high gloss robotic spray coating booth (23-13B) shall be limited by the following:

Interpolation and extrapolation of the data for the process weight rate up to sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$$E = 4.10 P^{0.67}$$

where E = rate of emission in pounds per hour and
P = process weight rate in tons per hour

D.4.4 Preventive Maintenance Plan [326 IAC 2-7-5(13)]

A Preventive Maintenance Plan, in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for the one (1) Department 23 high gloss robotic spray coating booth (23-13B).

Compliance Determination Requirements

D.4.5 Testing Requirements [326 IAC 2-7-6(1),(6)]

The Permittee is not required to test this facility by this permit. However, IDEM may require compliance testing at any specific time when necessary to determine if the facility is in compliance. If testing is required by IDEM, compliance with the Volatile Organic Compound (VOC) or Particulate Matter (PM) limits specified in Conditions D.4.1, D.4.2 and D.4.3 shall be determined by a performance test conducted in accordance with Section C - Performance Testing.

D.4.6 Volatile Organic Compounds (VOC)

Compliance with the VOC content and usage limitations contained in Conditions D.4.1 and D.4.2 shall be determined pursuant to 326 IAC 8-1-4(a)(3) and 326 IAC 8-1-2(a) using formulation data supplied by the coating manufacturer. IDEM, OAM, and City of Evansville EPA reserves the authority to determine compliance using Method 24 in conjunction with the analytical procedures specified in 326 IAC 8-1-4.

D.4.7 VOC Emissions

Compliance with Condition D.4.2(a) shall be demonstrated at the end of each month based on the total volatile organic compound usage for the most recent twelve (12) month period.

D.4.8 Particulate Matter (PM)

Pursuant to 326 IAC 6-3-2(c), the water back booth shall be in operation at all times the one (1) Department 23 high gloss robotic spray coating booth (23-13B) is in operation.

Compliance Monitoring Requirements [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]

D.4.9 Monitoring

- (a) Monthly inspections shall be performed of the coating emissions from the stack and the presence of overspray on the rooftops and the nearby ground. The Compliance Response Plan for this unit shall contain troubleshooting contingency and response steps for when a noticeable change in overspray emission, or evidence of overspray emission is observed. The Compliance Response Plan shall be followed whenever a condition exists which should result in a response step. Failure to take response steps in accordance with Section C - Compliance Monitoring Plan - Failure to Take Response Steps, shall be considered a violation of this permit.
- (b) Additional inspections and preventive measures shall be performed as prescribed in the Preventive Maintenance Plan.

Record Keeping and Reporting Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]

D.4.10 Record Keeping Requirements

- (a) To document compliance with Conditions D.4.1 and D.4.2, the Permittee shall maintain records in accordance with (1) through (6) below. Records maintained for (1) through (6) shall be taken monthly and shall be complete and sufficient to establish compliance with the VOC usage limits and/or the VOC emission limits established in Condition D.4.1 and D.4.2.

- (1) The amount and VOC content of each coating material and solvent used. Records shall include purchase orders, invoices, and material safety data sheets (MSDS) necessary to verify the type and amount used. Solvent usage records shall differentiate between those added to coatings and those used as cleanup solvents;
 - (2) A log of the dates of use;
 - (3) The cleanup solvent usage for each month;
 - (4) The total VOC usage for each month; and
 - (5) The weight of VOCs emitted for each compliance period.
- (b) To document compliance with Condition D.4.9, the Permittee shall maintain a log of monthly overspray observations and those additional inspections prescribed by the Preventive Maintenance Plan.
- (c) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.

D.4.11 Reporting Requirements

A quarterly summary of the information to document compliance with Condition D.4.2(a) shall be submitted to the addresses listed in Section C - General Reporting Requirements, of this permit, using the reporting forms located at the end of this permit, or their equivalent, within thirty (30) days after the end of the quarter being reported.

**Indiana Department of Environmental Management
Office of Air Management
and
City of Evansville EPA**

**Technical Support Document (TSD) for a Significant Source
Modification to a Part 70 Operating Permit**

Source Background and Description

Source Name:	Guardian Automotive Trim, Inc.
Source Location:	601 N. Congress Avenue, Evansville, IN 47715
County:	Vanderburgh
SIC Code:	3089
Operation Permit No.:	T163-6502-00017
Operation Permit Issuance Date:	January 19, 1999
Source Modification No.:	163-10592-00017
Permit Reviewer:	Yvette de los Angeles/EVP

The Office of Air Management (OAM) has reviewed a modification application from Guardian Automotive Trim, Inc, relating to the operation of a robotic spray application system.

History

On February 5, 1999, Guardian Automotive Trim, Inc. submitted an application to the OAM requesting to add an additional robotic spray coating booth to their existing plant. Guardian Automotive Trim, Inc. was issued a Part 70 permit (T163-6502-00017) on January 19, 1999. The changes proposed to the Title V is located at the end of this document.

New Emission Units and Pollution Control Equipment

The application includes information relating to the construction and operation of the following equipment:

- (a) One (1) Department 23 high gloss robotic spray coating booth (Adhesion Promoter Booth), identified as 23-13B, coating plastic parts, constructed in 1999, consisting of a spray application system (HVLP, its equivalent or better (e.g., electrostatic)), using water back booths of Particulate Matter control, exhausting to one (1) stack (23-13B). This new booth will be added to existing Department 23 high gloss robotic spray coating line (U23-1).
- (b) Four (4) new application guns (HVLP, its equivalent or better (e.g., electrostatic)) and four (4) new water back booths for particulate matter control to replace the application guns and the water back booths in Department 23 high gloss robotic spray coating line (U23-1).

Existing Approvals

The source was issued a Part 70 Operating Permit (T163-6502-00017) on January 19, 1999.

Enforcement Issue

There are no enforcement actions pending.

Stack Summary

Stack ID	Operation	Height (feet)	Diameter (feet)	Flow Rate (acfm)	Temperature (°F)
S23-13B	Water Back Booth	10 above roof	15	2,280	70

Recommendation

The staff recommends to the Commissioner that the Significant Source Modification be approved. This recommendation is based on the following facts and conditions:

Unless otherwise stated, information used in this review was derived from the application and additional information submitted by the applicant.

An application for the purposes of this review was received on February 5, 1999. Additional information was received on March 19, 1999.

Emission Calculations

See Appendix A of this document for detailed emissions calculations (three (3) pages).

Potential To Emit

Pursuant to 326 IAC 2-1.1-1(16), Potential to Emit is defined as “the maximum capacity of a stationary source to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or type or amount of material combusted, stored, or processed shall be treated as part of its design if the limitation is enforceable by the U. S. EPA.”

Pollutant	Potential To Emit (tons/year)
PM	58.77
PM-10	58.77
SO ₂	0.00
VOC	679.66
CO	0.00
NO _x	0.00

Note: For the purpose of determining Title V applicability for particulates, PM-10, not PM, is the regulated pollutant in consideration.

HAP's	Potential To Emit (tons/year)
Xylene	greater than 10
Toluene	greater than 10
Ethyl Benzene	greater than 10
TOTAL	greater than 25

- (a) The potential to emit (as defined in 326 IAC 2-1.1-1(16)) of PM-10 and VOC are greater than 25 tons per year. Therefore, the modification is subject to the provisions of 326 IAC 2-7-10.5.
- (b) The potential to emit (as defined in 326 IAC 2-1.1-1(16)) of any single HAP is equal to or greater than ten (10) tons per year and the potential to emit (as defined in 326 IAC 2-7-1(29)) of a combination HAPs is greater than or equal to twenty-five (25) tons per year. Therefore, the modification is subject to the provisions of 326 IAC 2-7-10.5.

- (c) Fugitive Emissions
Since this type of operation is not one of the twenty-eight (28) listed source categories under 326 IAC 2-2 and since there are no applicable New Source Performance Standards that were in effect on August 7, 1980, the fugitive particulate matter (PM) and volatile organic compound (VOC) emissions are not counted toward determination of PSD and Emission Offset applicability.

Limited Potential to Emit

The table below summarizes the total potential to emit, reflecting all limits, of the significant emission units.

	Limited Potential to Emit (tons/year)						
Process/facility	PM	PM-10	SO ₂	VOC	CO	NO _x	HAPs
New Spray Booth ID # 23-13B	1.13	1.13	0.00	65.44	0.00	0.00	39.63
Total Emissions	1.13	1.13	0.00	65.44	0.00	0.00	39.63

Note: Pursuant to Part 70 Permit (T163-6502-00017), issued on January 19, 1999, Department 23 high gloss coating line (U23-1) and low gloss coating line (U23-2) have a PSD threshold of less than 250 tons per year. The source is adding the proposed spray booth to the existing Department 23 high gloss coating line (U23-1) for the purpose of increased flexibility and will maintain its current potential to emit of VOC of 246 tons per year limit under the issued Part 70 permit. Since this modification to the existing line will not increase potential to emit VOC, pursuant to 326 IAC 2-2, and 40 CFR 52.21, the PSD requirements do not apply.

County Attainment Status

The source is located in Vanderburgh County.

Pollutant	Status
PM-10	attainment
SO ₂	attainment
NO ₂	attainment
Ozone	attainment
CO	attainment
Lead	attainment

- (a) Volatile organic compounds (VOC) and oxides of nitrogen (NO_x) are precursors for the formation of ozone. Therefore, VOC and NO_x emissions are considered when evaluating the rule applicability relating to the ozone standards. Vanderburgh County has been designated as attainment or unclassifiable for ozone.

Part 70 Permit Determination

326 IAC 2-7 (Part 70 Permit Program)

This existing source has a Part 70 (T163-6502-00017) permit, issued on January 19, 1999. The equipment being reviewed under this permit shall be incorporated in the Part 70 permit.

Federal Rule Applicability

There are no new Federal Rules applicable due to this First Significant Source Modification. All Federal Rules cited in Part 70 Operating Permit T163-6502-00017, issued on January 19, 1999, continue to apply to this source.

State Rule Applicability - Entire Source

There are no new State Rules applicable on a source-wide basis due to this First Significant Source Modification. All source-wide State Rules cited in Part 70 Operating Permit T163-6502-00017, issued on January 19, 1999, continue to apply to this source.

State Rule Applicability - Individual Facilities

326 IAC 2-2 (Prevention of Significant Deterioration)

Pursuant to Part 70 Permit (T163-6502-00017), issued on January 19, 1999, the Department 23 high and low gloss robotic spray coating lines (U23-1 and U23-2) have the following operating requirements:

- (a) The use of solventless mask washers;
- (b) The use of solventless boothcoat; and
- (c) The amount of non-acetone solvent, including thinners and cleanup solvents, delivered to the applicators shall be limited to less than 250 tons per year.

This modification to the Department 23 high and low gloss robotic spray coating lines (U23-1 and U23-2) will not increase the coating operation's potential to emit of VOC of less than 250 tons per year. Pursuant to Part 70 Permit (T163-6502-00017), issued on January 19, 1999, the source will maintain its 246 tons per year limit. Therefore, the requirements of 326 IAC 2-2 (Prevention of Significant Deterioration) will not apply to these facilities.

326 IAC 2-4.1-1 (New Source Toxics Control)

The new surface coating booth (23-13B) is not subject to the requirements of 326 IAC 2-4.1-1 (New Source Toxics Control). The proposed changes to the Department 23 High Gloss Robotic Spray Coating Line does not constitute a construction or reconstruction because:

- (a) The fixed cost of the new equipment does not exceed 50% of the fixed capital cost required to construct an entirely new facility, and
- (b) The new booth cannot produce an intermediate or final product independently.

Therefore, the new surface coating booth (ID # 23-13B) is not subject to the requirements of 326 IAC 2-4.1-1 (New Source Toxics Control)

326 IAC 6-3 (Process Operations)

Pursuant to 326 IAC 6-3 (Process Operations), the particulate matter (PM) from the one (1) Department 23 high gloss robotic spray coating booth (23-13B) shall be limited by the following:

Interpolation and extrapolation of the data for the process weight rate up to sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$$E = 4.10 P^{0.67} \quad \text{where } E = \text{rate of emission in pounds per hour and} \\ P = \text{process weight rate in tons per hour}$$

The water back booth shall be in operation at all times the one (1) Department 23 high gloss robotic spray coating booth (23-13B) is in operation, in order to comply with this limit.

326 IAC 8-1-6 (New Facilities; General Reduction Requirements)

The one (1) Department 23 high gloss robotic spray coating booth (23-13B) is subject to 326 IAC 8-1-6 (General Reduction Requirements for New Facilities). New facilities (as of January 1, 1980), which have potential VOC emissions of 25 tons or more per year, located anywhere in the state, which are not otherwise regulated by other provisions of 326 IAC 8, shall reduce VOC emissions using Best Available Control Technology (BACT). A summary of the Best Available Control Technology was performed and summarized as follows:

This analysis evaluated the following:

- (a) Previous BACT
- (b) Solvent/Material Substitution
- (c) Add-on Controls

Previous BACT

A construction permit (CP 163-2106) was issued for twelve (12) paint booths and four (4) curing ovens on April 3, 1992. The proposed modification in this application involves adding one (1) booth to one of the manufacturing lines in this permit. During issuance of the 1992 permit, Best Available Control Technology was determined to be the use of robotic high volume, low pressure applicators, solventless mask washers, solventless boothcoat, and an annual report on the feasibility of the use of water-based coatings or any other method of reducing VOC emissions. Because the new additional booth will increase potential emissions for the entire manufacturing line, a BACT re-evaluation is included in this attachment to the modification application.

Solvent/Material Substitution

- (a) Waterborne Coatings
Guardian believes that the best method of controlling volatile organic compounds is to eliminate the source of pollution before the exhaust. This could be accomplished with the use of water-based (waterborne) coatings or low-solvent coatings. Guardian has been working with several companies, including Red Spot and Morton International, since February 1991. At this time we have been unable to secure a water-based coating that will provide the quality finish required by our customers. However, Guardian will continue to work with these and other paint suppliers in an effort to develop high-quality, low-temperature and fast curing water-based coating and lower VOC coatings.
- (b) Nonphotochemically Reactive Solvents
The use of nonphotochemically reactive solvents as a replacement for VOC based solvents in the coatings is not feasible. At present there are non commercially available other than acetone. The coatings may contain some acetone but Guardian cannot use only this solvent in the formulation because the coatings will not meet the client's specification.
- (c) High Solid Coatings
These are used to reduce the VOC emissions from surface coating operations. Paints are formulated with a high solid content replacing some of the volatile organic compounds. Guardian will be using the best high solid coatings available for plastic coating systems.

(d) Transfer Efficiency

The company will use robotic high volume, low pressure (HVLP) spray equipment for the new paint booth (23-13B) and electrostatic spray coating application to replace the existing HVLP spraying equipment used at the four existing paint booths (23-5B, 23-6B, 23-7B, and 23-8B). The transfer efficiency of the HVLP and electrostatic spray application to plastic parts is estimated to be 25% and 35-45%, respectively.

Add-On Controls

Technical Feasibility Evaluation

Control Technology	Control Efficiency	Required VOC Inlet Concentration	Technical Feasibility
Carbon Adsorption	94-95%	10 - 10,000 ppm	low
Catalytic Incinerator	92-98%	100 - 1,000 ppm < 25% LEL	not feasible
Recuperative Thermal Oxidizer	94-98%	1,000 - 10,000 ppm < 50% LEL	not feasible
Regenerative Thermal Oxidizer	94-98%	1,000 - 10,000 ppm < 50% LEL	not feasible

The VOC concentration in the pollutant airstream is estimated to be approximately 46.6 lbs/hr or 55 ppm VOCs.

(a) Carbon Adsorption

The removal of pollutants by carbon adsorption treatment is a commonly known technology. Carbon is used due to its capability to provide a large adsorption area where the pollutants can adhere. This technology is recommended for emission streams containing a minimum of 10 ppm of combustible VOC. **The carbon adsorption system is technically feasible.** Therefore, an analysis of carbon adsorption with onsite incineration will be performed.

(b) Catalytic Incinerator

A catalytic incinerator uses the heat that is recovered from the post-combustion exhaust stream to preheat the inlet pollutant airstream. Silica gravel is used to store recovered heat energy. After passing through the preheat chamber, the pollutant airstream is combusted achieving the desired emissions reduction. This technology is recommended for emission streams containing a minimum of 100 ppm of combustible VOC but less than 25% of the lower explosive limit (LEL) of the pollutant. **The catalytic incinerator system is not technically feasible**, because the inlet pollutant airstream concentration is lower than the specified minimum.

(c) Recuperative Thermal Oxidizer

This technology recovers up to 70% of the heat of combustion using a gas-to-gas exchanger, and is recommended for emission streams containing a minimum of 1,000 ppm of combustible VOC but less than 50% of the lower explosive limit (LEL) of the pollutant. **The recuperative thermal oxidizer system is not technically feasible**, because the inlet pollutant airstream concentration is lower than the specified minimum.

(d) Regenerative Thermal Oxidizer

This technology recovers up to 95% of the heat generated during the oxidation process and is suitable for the same inlet streams as the recuperative thermal incinerator. The difference is the method of preheating the pollutant stream before the combustion chamber. Instead of the air-to-air heat exchanger used in the recuperative system, regenerative installations have two or more heat recovery chambers. **The regenerative thermal oxidizer system is not technically feasible**, because the inlet pollutant airstream concentration is lower than the specified minimum.

- Regarding carbon adsorption, there is the concern that the expected VOC concentration will be close to the required 10 ppm specification. This could result in the operation of a control system that would provide a negligible reduction or inefficient removal of VOC emissions.
- In the case of combustion technologies, the VOC concentration required is twice as much to two orders of magnitude higher than the maximum expected concentration in the exhaust gas emissions. Coupled with high flow rates, the low VOC concentration will result in an extremely high rate of natural gas combustion to achieve the temperature required to combust VOCs. Combustion technologies, from a practical standpoint, are unusable for our proposed modification.
- There are two environmental concerns also relating to the control technologies discussed above. In the case of carbon and catalyst use, a solid waste will be created when the materials are spent. In certain cases this waste material may be a hazardous waste. In the case of combustion technologies, although VOCs are destroyed, there is a trade-off in environmental benefits because nitrogen oxides will be created and emitted during supplemental natural gas combustion.

Add-on Control Cost Analysis

Although most control technologies were not technically feasible, a cost comparison was performed. The following table summarizes the options that were considered.

Evaluation

Options	Potential Emissions (tons/yr)	Actual Emissions (tons/yr)	Emissions Removed (tons/yr)	Destruction Efficiency (%)	Overall Control Efficiency	\$/ton removed
Carbon Adsorption	453.56	174.62	141.01	95	80.75%	9,209
Catalytic Incinerator	453.56	174.62	141.01	95	80.75%	21,239
Recuperative Thermal Oxidizer	453.56	174.62	141.01	95	80.75%	16,672
Regenerative Thermal Oxidizer	453.56	174.62	141.01	95	80.75%	16,593

* - capture efficiency of 85% is considered.

Methodology:

Emission removed = (actual emissions) * (control efficiency)

\$/ton removed = total annual cost/emissions removed

The cost breakdown is as follows:

1. Capital Cost
 - (a) Base price: purchase price, auxiliary equipment, instruments, controls, taxes and freight.
 - (b) Direct installation cost: foundations/supports, erection/handling, electrical, piping, insulation, painting, site preparation and building/facility.
 - (c) Indirect installation cost: engineering, supervision, construction/filed expenses, construction fee, start up, performance test, model study and contingencies.
2. Annual Cost
 - (a) Direct operating cost: operating labor (operator, supervisor), labor and material maintenance, operating materials, utilities (electricity, gas).

Summary of the Add-on Control Analysis

- (a) Carbon Adsorption - This control technology is technically feasible, with an overall control efficiency of 80.75%. However, the company rejected this option as cost prohibitive at \$9,209 per ton of VOC removed.
- (b) Catalytic Incinerator - This control technology is not technically feasible. If this was feasible, the company would reject this option as cost prohibitive at \$21,239 per ton of VOC removed.
- (c) Recuperative Thermal Oxidizer - This control technology is not technically feasible. If this was feasible, the company would reject this option as cost prohibitive at \$16,672 per ton of VOC removed.
- (d) Regenerative Thermal Oxidizer - This control technology is not technically feasible. If this was feasible, the company would reject this option as cost prohibitive at \$16,593 per ton of VOC removed.

Cost Effectiveness

Our economic analysis of system operation shows a cost of \$9,000 to \$21,000 per ton of VOC removed. Since the evaluated BACT controls indicate these control options are not cost effective, we do not propose the installation of add-on controls.

BACT DETERMINATION

After analysis of solvent/material substitution and add-on controls, the BACT for the one (1) Department 23 high gloss robotic spray coating booth (23-13B) is:

- the use of robotic high volume, low pressure applicators, its equivalent or better,
- the use of solventless mask washers,
- the use of solventless boothcoats, and
- an annual report must be submitted to the Evansville Environmental Protection Agency on the feasibility of the use of water-based coatings or any other method of reducing VOC emissions.

Compliance Requirements

Permits issued under 326 IAC 2-7 are required to ensure that sources can demonstrate compliance with applicable state and federal rules on a more or less continuous basis. All state and federal rules contain compliance provisions, however, these provisions do not always fulfill the requirement for a more or less continuous demonstration. When this occurs IDEM, OAM, in conjunction with the source, must develop specific conditions to satisfy 326 IAC 2-7-5. As a result, compliance requirements are divided into two sections: Compliance Determination Requirements and Compliance Monitoring Requirements.

Compliance Determination Requirements in Section D of the permit are those conditions that are found more or less directly within state and federal rules and the violation of which serves as grounds for enforcement action. If these conditions are not sufficient to demonstrate continuous compliance, they will be supplemented with Compliance Monitoring Requirements, also Section D of the permit. Unlike Compliance Determination Requirements, failure to meet Compliance Monitoring conditions would serve as a trigger for corrective actions and not grounds for enforcement action. However, a violation in relation to a compliance monitoring condition will arise through a source's failure to take the appropriate corrective actions within a specific time period.

The compliance monitoring requirements applicable to this source are as follows:

1. The one (1) Department 23 high gloss robotic spray coating booth (23-13B) has applicable compliance monitoring conditions as specified below:
 - (a) Monthly inspections shall be performed of the coating emissions from the stack and the presence of overspray on the rooftops and the nearby ground. The Compliance Response Plan for this unit shall contain troubleshooting contingency and response steps for when a noticeable change in overspray emission, or evidence of overspray emission is observed. The Compliance Response Plan shall be followed whenever a condition exists which should result in a response step. Failure to take response steps in accordance with Section C - Compliance Monitoring Plan - Failure to Take Response Steps, shall be considered a violation of this permit.

These monitoring conditions are necessary because the water back booth for the one (1) Department 23 high gloss robotic spray coating booth (23-13B) must operate properly to ensure compliance with 326 IAC 6-3 (Process Operations) and 326 IAC 2-7 (Part 70).

Air Toxic Emissions

Indiana presently requests applicants to provide information on emissions of the 188 hazardous air pollutants (HAPs) set out in the Clean Air Act Amendments of 1990. These pollutants are either carcinogenic or otherwise considered toxic and are commonly used by industries. They are listed as air toxics on the Office of Air Management (OAM) Part 70 Application Form GSD-08.

- (a) This source will emit levels of air toxics greater than those that constitute major source applicability according to Section 112 of the 1990 Clean Air Act Amendments.
- (b) See attached calculations for detailed air toxic calculations. (See Appendix A, Page 2 of 3)

Changes Proposed

The following changes have been made to the Part 70 Operating Permit (T163-6502-00017) :

- (a) Condition A.2, Page 5 of 49
Add to the listing of emission units the following:

A.2 Emission Units and Pollution Control Equipment Summary [326 IAC 2-7-4(c)(3)]
[326 IAC 2-7-5(15)]

This stationary source consists of the following emission units and pollution control devices:

- (1) One (1) Department 23 high gloss robotic spray coating line, coating plastic parts, constructed in March, 1994, identified as U23-1, consisting of ~~four (4)~~ **five (5) spray booths (HVLP, its equivalent or better (e.g., electrostatic))** ~~High Volume, Low Pressure (HVLP) spray booths~~ (23-5B, 23-6B, 23-7B, ~~and~~ 23-8B, **and 23-13B**), each using water back booths for Particulate Matter (PM) control, each exhausting to one (1) stack (23-5B, 23-6B, 23-7B, ~~and~~ 23-8B, **and 23-13B**);
- (b) Section D.4, Pages 41a, 41b, and 41c, was added to the existing Title V (T163-6502-00017) permit.

Conclusion

The operation of this automotive decorative trim coating facility shall be subject to the conditions of the attached proposed **First Significant Source Modification to Part 70 Permit No. 163-10592-00017**.

**Indiana Department of Environmental Management
Office of Air Management**

Addendum to the
Technical Support Document (TSD) for a Source Modification to a
Part 70 Operating Permit

Source Background and Description

Source Name:	Guardian Automotive Trim, Inc.
Source Location:	601 N. Congress Avenue, Evansville, IN 47715
County:	Vanderburgh
SIC Code:	3089
Operation Permit No.:	T163-6502-00017
Operation Permit Issuance Date:	January 19, 1999
Source Modification No.:	163-10592-00017
Permit Reviewer:	Yvette de los Angeles/EVP

On May 14, 1999, the Office of Air Management (OAM) had a notice published in the Evansville Courier, Evansville, Indiana, stating that Guardian Automotive Trim, Inc had applied for a Significant Source Modification to a Part 70 Operating Permit for the construction and operation of an additional robotic spray coating booth to their existing plant. The notice also stated that OAM proposed to issue a permit for this installation and provided information on how the public could review the proposed permit and other documentation. Finally, the notice informed interested parties that there was a period of thirty (30) days to provide comments on whether or not this permit should be issued as proposed.

On June 15, 1999, Guardian Automotive Trim, Inc submitted comments on the proposed Significant Source Modification to a Part 70 permit. The summary of the comments and corresponding responses are as follows (changes in bold or strikeout for emphasis):

Comment 1:

Technical Support Document (Page 2) Stack Summary:

Guardian requests that the following information from the stack summary table be corrected:

Diameter (feet)	Flow Rate (ascfm)
15 in.	2,280

Response 1:

The OAM prefers that the Technical Support Document and its associated Appendix reflect the permit that was on public notice. Changes to the permit or technical support material that occur after the public notice are documented in this Addendum to the Technical Support Document. This accomplishes the desired result of ensuring that these types of concerns are documented and part of the record regarding this permit decision.

Changes to the Stack Summary shall be noted as stated above.

Comment 2:

Technical Support Document (Page 2) Potential to Emit:

The VOC and Particulate potential emissions from the production of the four parts is as follows:

Part	VOC (tpy)	Particulate (tpy)
FWF	190.44	16.47
RQF	217.65	18.82
RDF	244.86	21.17
SE	26.71	2.31
Total	679.66	58.77

The Potential to Emit table in the TSD indicates that the VOC and Particulate Potential to Emit is 679.66 ton per year of VOC and 58.77 tons per year of Particulate. This is not physically and operationally possible. Guardian cannot produce the four parts at the same time for 8760 hours a year.

The worst case scenario is to assume that only one part, the RDF, is produced during the 8760 hours a year. Then the Limited Potential to Emit would be 244.86 tons per year of VOC and 21.17 tons per year of Particulate. However, Guardian believes that this assumption is not valid for this operation because all parts are needed to manufacture the final product. All orders are filled for equal numbers of FWF, RQF, RDF, and SE parts. Therefore, the worst case scenario will be PTE VOC = 169.92 tons per year, PTE of PM and PM10 = 14.69 tons per year. These numbers were calculated based on the following formula:

$$(25\% * \text{PTE FWF}) + (25\% * \text{PTE RQF}) + (25\% * \text{PTE RDF}) + (25\% * \text{PTE SE})$$

Please revise the PTE table to reflect the correct numbers.

Response 2:

The definition of potential to emit is defined in the TSD as “the maximum capacity of a stationary source to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or type or amount of material combusted, stored, or processed shall be treated as part of its design if the limitation is enforceable by the U. S. EPA.” The Potential to Emit of 679.66 ton per year for VOC and 58.77 tons per year for Particulate is considered as the source’s “maximum capacity” to emit any air pollutant under its physical and operational design. 25% of the PTE is not a limitation enforceable by the U.S. EPA, and therefore the equation above cannot be used as their Potential to Emit. There will be no change to the TSD due to this comment.

Comment 3:

Technical Support Document (Page 3) Limited Potential to Emit:

The one Department 23 high gloss robotic spray coating line and one Department 23 low gloss robotic spray coating line are limited to 246 tons per 12 month consecutive period. The new spray booth will be part of the Department 23 high gloss robotic spray coating line. Therefore, Guardian requests not to establish a Limited Potential to Emit for the new spray booth.

In addition, we wish to indicated that the 65.44 tons per year shown for the new spray booth in the Limited Potential to Emit table is our estimated actual annual emissions.

Response 3:

The Limited Potential to Emit table shall only reflect the modification that will be made, not the entire line. The Limited Potential to Emit for the new spray booth has been calculated to be 65.44 tons per year. Therefore, there will be no change to the TSD due to this comment.

Comment 4:

Technical Support Document (Page 4) State Rule Applicability - Individual Facilities:

326 IAC 2-2 (Prevention of Significant Deterioration)
Guardian requests to delete the following from this paragraph:

- (a) The use of solventless mask washers;
- (b) The use of solventless boothcoat

Guardian believes that this is not necessary to mention the above operating requirements under this section because the use of the indicated materials does not constitute avoiding PSD. These requirements are stated to satisfy 326 IAC 8-1-6, not 326 IAC 2-2.

Response 4:

The OAM prefers that the Technical Support Document and its associated Appendix reflect the permit that was on public notice. Changes to the permit or technical support material that occur after the public notice are documented in this Addendum to the Technical Support Document. This accomplishes the desired result of ensuring that these types of concerns are documented and part of the record regarding this permit decision.

OAM agrees that the above operating requirements are not necessary to comply with 326 IAC 2-2. Please note the changes under State Rule Applicability - Individual Facilities:

326 IAC 2-2 (Prevention of Significant Deterioration)

Pursuant to Part 70 Permit (T163-6502-00017), issued on January 19, 1999, the Department 23 high and low gloss robotic spray coating lines (U23-1 and U23-2) have the following operating requirements:

- ~~(a) The use of solventless mask washers;~~
- ~~(b) The use of solventless boothcoat; and~~

- ~~(c)~~ (a) The amount of non-acetone solvent, including thinners and cleanup solvents, delivered to the applicators shall be limited to less than 250 tons per year.

This modification to the Department 23 high and low gloss robotic spray coating lines (U23-1 and U23-2) will not increase the coating operation's potential to emit of VOC of less than 250 tons per year. Pursuant to Part 70 Permit (T163-6502-00017), issued on January 19, 1999, the source will maintain its 246 tons per year limit. Therefore, the requirements of 326 IAC 2-2 (Prevention of Significant Deterioration) will not apply to these facilities.

Appendix A: Emissions Calculations
VOC and Particulate
From Surface Coating Operations for New Adhesion Promoter Booth

Company Name: Guardian Automotive Trim, Inc.
Address City IN Zip: 601 N. Congress Avenue, Evansville, IN 47715
CP: 163-10592
Plt ID: 163-00017
Reviewer: Yvette de los Angeles/EVP
Date: 07/04/99

Material	Process	Density (Lb/Gal)	Weight % Volatile (H2O & Organics)	Weight % Water	Weight % Organics	Volume % Water	Volume % Non-Volatiles (solids)	Gal of Mat. (gal/unit)	Maximum (unit/hour)	Pounds VOC per gallon of coating less water	Pounds VOC per gallon of coating	Potential VOC pounds per hour	Potential VOC pounds per day	Potential VOC tons per year	Particulate Potential (ton/yr)	lb VOC/gal solids	Transfer Efficiency
Adguard Adhesion Promoter	Front Wheel Flare (FWF)	7.6	74.30%	0.0%	74.3%	0.0%	18.35%	0.03850	200.000	5.65	5.65	43.48	1043.53	190.44	16.47	30.77	75%
Adguard Adhesion Promoter	Rear Quarter Flare (RQF)	7.6	74.30%	0.0%	74.3%	0.0%	18.35%	0.02200	400.000	5.65	5.65	49.69	1192.60	217.65	18.82	30.77	75%
Adguard Adhesion Promoter	Rear Door Flare (RDF)	7.6	74.30%	0.0%	74.3%	0.0%	18.35%	0.01650	600.000	5.65	5.65	55.90	1341.68	244.86	21.17	30.77	75%
Adguard Adhsion Promoter	Sill Extension (SE)	7.6	74.30%	0.0%	74.3%	0.0%	18.35%	0.00180	600.000	5.65	5.65	6.10	146.37	26.71	2.31	30.77	75%
TOTAL POTENTIAL EMISSIONS												155.17	3724.18	679.66	58.77		

Material	Process	Density (Lb/Gal)	Weight % Volatile (H2O & Organics)	Weight % Water	Weight % Organics	Volume % Water	Volume % Non-Volatiles (solids)	Gal of Mat. (gal/unit)	Actual Prod. (unit/hour)	Pounds VOC per gallon of coating less water	Pounds VOC per gallon of coating	Actual VOC pounds per hour	Actual VOC pounds per day	Actual VOC tons per year	Control Efficiency PM %	Particulate Actual (ton/yr)
Adguard Adhesion Promoter	Front Wheel Flare (FWF)	7.6	74.30%	0.0%	74.3%	0.0%	18.35%	0.03850	33.575	5.65	5.65	7.30	175.18	31.97	95.00%	0.55
Adguard Adhesion Promoter	Rear Quarter Flare (RQF)	7.6	74.30%	0.0%	74.3%	0.0%	18.35%	0.02200	33.575	5.65	5.65	4.17	100.10	18.27	95.00%	0.32
Adguard Adhesion Promoter	Rear Door Flare (RDF)	7.6	74.30%	0.0%	74.3%	0.0%	18.35%	0.01650	33.575	5.65	5.65	3.13	75.08	13.70	95.00%	0.24
Adguard Adhsion Promoter	Sill Extension (SE)	7.6	74.30%	0.0%	74.3%	0.0%	18.35%	0.00180	33.575	5.65	5.65	0.34	8.19	1.49	95.00%	0.03
TOTAL ACTUAL EMISSIONS												14.94	358.56	65.44	95.00%	1.13

METHODOLOGY

Pounds of VOC per Gallon Coating less Water = (Density (lb/gal) * Weight % Organics) / (1-Volume % water)

Pounds of VOC per Gallon Coating = (Density (lb/gal) * Weight % Organics)

Potential VOC Pounds per Hour = Pounds of VOC per Gallon coating (lb/gal) * Gal of Material (gal/unit) * Maximum (units/hr)

Potential VOC Pounds per Day = Pounds of VOC per Gallon coating (lb/gal) * Gal of Material (gal/unit) * Maximum (units/hr) * (24 hr/day)

Potential VOC Tons per Year = Pounds of VOC per Gallon coating (lb/gal) * Gal of Material (gal/unit) * Maximum (units/hr) * (8760 hr/yr) * (1 ton/2000 lbs)

Particulate Potential Tons per Year = (units/hour) * (gal/unit) * (lbs/gal) * (1-Weight % Volatiles) * (1-Transfer efficiency) * (8760 hrs/yr) * (1 ton/2000 lbs)

Pounds VOC per Gallon of Solids = (Density (lbs/gal) * Weight % organics) / (Volume % solids)

Appendix A: Emission Calculations
HAP Emission Calculations for New Adhesion Promotor Booth

Page 2 of 3 TSD AppA

Company Name: Guardian Automotive Trim, Inc.
Address City IN Zip: 601 N. Congress Avenue, Evansville, IN 47715
CP#: 163-10592
Plt ID: 163-00017
Permit Reviewer: Yvette de los Angeles/EVP
Date: 07/04/99

Material	Process	Density (Lb/Gal)	Gallons of Material (gal/unit)	Maximum (unit/hour)	Weight % Xylene	Weight % Toluene	Weight % Ethyl Benzene	Xylene Emissions (ton/yr)	Toluene Emissions (ton/yr)	Ethyl Benzene Emissions (ton/yr)	Total Emissions (ton/yr)
Adguard Adhesion Promoter	Front Wheel Flare (FWF)	7.6	0.03850	200.000	14.00%	27.00%	4.00%	35.88	69.21	10.25	115.34
Adguard Adhesion Promoter	Rear Quarter Flare (RQF)	7.6	0.02200	400.000	14.00%	27.00%	4.00%	41.01	79.09	11.72	131.82
Adguard Adhesion Promoter	Rear Door Flare (RDF)	7.6	0.01650	600.000	14.00%	27.00%	4.00%	46.14	88.98	13.18	148.30
Adguard Adhesion Promoter	Sill Extension (SE)	7.6	0.00180	600.000	14.00%	27.00%	4.00%	5.03	9.71	1.44	16.18
State Potential Emissions								128.07	246.98	36.59	411.64

Material	Process	Density (Lb/Gal)	Gallons of Material (gal/unit)	Actual (unit/hour)	Weight % Xylene	Weight % Toluene	Weight % Ethyl Benzene	Xylene Emissions (ton/yr)	Toluene Emissions (ton/yr)	Ethyl Benzene Emissions (ton/yr)	Total Emissions (ton/yr)
Adguard Adhesion Promoter	Front Wheel Flare (FWF)	7.6	0.03850	33.575	14.00%	27.00%	4.00%	6.02	11.62	1.72	19.36
Adguard Adhesion Promoter	Rear Quarter Flare (RQF)	7.6	0.02200	33.575	14.00%	27.00%	4.00%	3.44	6.64	0.98	11.06
Adguard Adhesion Promoter	Rear Door Flare (RDF)	7.6	0.01650	33.575	14.00%	27.00%	4.00%	2.58	4.98	0.74	8.30
Adguard Adhesion Promoter	Sill Extension (SE)	7.6	0.00180	33.575	14.00%	27.00%	4.00%	0.28	0.54	0.08	0.91
Actual Emissions								12.33	23.78	3.52	39.63

METHODOLOGY

HAPS emission rate (tons/yr) = Density (lb/gal) * Gal of Material (gal/unit) * Maximum (unit/hr) * Weight % HAP * 8760 hrs/yr * 1 ton/2000 lbs

Appendix A: Emissions Calculations
Actual VOC and Particulate Emissions
From Surface Coating Operations for Department 23 High Gloss Robotic Spray Line

Company Name: Guardian Automotive Trim, Inc.
Address City IN Zip: 601 N. Congress Avenue, Evansville, IN 47715
CP: 163-10592
Plt ID: 163-00017
Reviewer: Yvette de los Angeles/EVP
Date: 07/04/99

Material	Booth ID	Density (Lb/Gal)	Weight % Volatile (H2O & Organics)	Weight % Water	Weight % Organics	Volume % Water	Volume % Non-Volatiles (solids)	Gal of Mat. (gal/unit)	Actual Prod. (unit/hour)	Pounds VOC per gallon of coating less water	Pounds VOC per gallon of coating	Actual VOC pounds per hour	Actual VOC pounds per day	Actual VOC tons per year	Particulate Actual (ton/yr)	Lb VOC/gal solids	Transfer Efficiency
Front Wheel Flare (FWF)																	
1 K Flexible Clearcoat	23-8B	8.2	46.00%	0.3%	45.7%	0.3%	48.00%	0.0242	33.58	3.76	3.75	3.04	73.08	13.34	3.94	7.81	75%
1 K Flexible Clearcoat	23-7B	8.2	46.00%	0.3%	45.7%	0.3%	48.00%	0.0242	33.58	3.76	3.75	3.04	73.08	13.34	3.94	7.81	75%
Toreador Red	23-6B	8.5	52.60%	0.0%	52.6%	0.0%	37.70%	0.0203	33.58	4.47	4.47	3.05	73.14	13.35	3.01	11.86	75%
Toreador Red	23-5B	8.5	52.60%	0.0%	52.6%	0.0%	37.70%	0.0203	33.58	4.47	4.47	3.05	73.14	13.35	3.01	11.86	75%
Adguard Promoter	23-13B	7.6	74.30%	0.0%	74.3%	0.0%	18.35%	0.0385	33.58	5.65	5.65	7.30	175.18	31.97	2.76	30.77	75%
Rear Quarter Flare (RQF)																	
1 K Flexible Clearcoat	23-8B	8.2	46.00%	0.3%	45.7%	0.3%	48.00%	0.0138	33.58	3.76	3.75	1.74	41.67	7.61	2.25	7.81	75%
1 K Flexible Clearcoat	23-7B	8.2	46.00%	0.3%	45.7%	0.3%	48.00%	0.0138	33.58	3.76	3.75	1.74	41.67	7.61	2.25	7.81	75%
Toreador Red	23-6B	8.5	52.60%	0.0%	52.6%	0.0%	37.70%	0.0116	33.58	4.47	4.47	1.74	41.79	7.63	1.72	11.86	75%
Toreador Red	23-5B	8.5	52.60%	0.0%	52.6%	0.0%	37.70%	0.0116	33.58	4.47	4.47	1.74	41.79	7.63	1.72	11.86	75%
Adguard Promoter	23-13B	7.6	74.30%	0.0%	74.3%	0.0%	18.35%	0.0220	33.58	5.65	5.65	4.17	100.10	18.27	1.58	30.77	75%
Rear Door Flare (RDF)																	
1 K Flexible Clearcoat	23-8B	8.2	46.00%	0.3%	45.7%	0.3%	48.00%	0.0104	33.58	3.76	3.75	1.31	31.40	5.73	1.69	7.81	75%
1 K Flexible Clearcoat	23-7B	8.2	46.00%	0.3%	45.7%	0.3%	48.00%	0.0104	33.58	3.76	3.75	1.31	31.40	5.73	1.69	7.81	75%
Toreador Red	23-6B	8.5	52.60%	0.0%	52.6%	0.0%	37.70%	0.0087	33.58	4.47	4.47	1.31	31.34	5.72	1.29	11.86	75%
Toreador Red	23-5B	8.5	52.60%	0.0%	52.6%	0.0%	37.70%	0.0087	33.58	4.47	4.47	1.31	31.34	5.72	1.29	11.86	75%
Adguard Promoter	23-13B	7.6	74.30%	0.0%	74.3%	0.0%	18.35%	0.0165	33.58	5.65	5.65	3.13	75.08	13.70	1.18	30.77	75%
Sill Extension (SE)																	
1 K Flexible Clearcoat	23-8B	8.2	46.00%	0.3%	45.7%	0.3%	48.00%	0.0012	33.58	3.76	3.75	0.15	3.62	0.66	0.20	7.81	75%
1 K Flexible Clearcoat	23-7B	8.2	46.00%	0.3%	45.7%	0.3%	48.00%	0.0012	33.58	3.76	3.75	0.15	3.62	0.66	0.20	7.81	75%
Toreador Red	23-6B	8.5	52.60%	0.0%	52.6%	0.0%	37.70%	0.0010	33.58	4.47	4.47	0.15	3.60	0.66	0.15	11.86	75%
Toreador Red	23-5B	8.5	52.60%	0.0%	52.6%	0.0%	37.70%	0.0010	33.58	4.47	4.47	0.15	3.60	0.66	0.15	11.86	75%
Adguard Promoter	23-13B	7.6	74.30%	0.0%	74.3%	0.0%	18.35%	0.0018	33.58	5.65	5.65	0.34	8.19	1.49	0.13	30.77	75%

Actual Emissions	Add worst case coating to all solvents	39.91	957.86	174.81	34.13
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METHODOLOGY

Pounds of VOC per Gallon Coating less Water = (Density (lb/gal) * Weight % Organics) / (1-Volume % water)

Pounds of VOC per Gallon Coating = (Density (lb/gal) * Weight % Organics)

Potential VOC Pounds per Hour = Pounds of VOC per Gallon coating (lb/gal) * Gal of Material (gal/unit) * Actual Production (units/hr)

Actual VOC Pounds per Day = Pounds of VOC per Gallon coating (lb/gal) * Gal of Material (gal/unit) * Actual Production (units/hr) * (24 hr/day)

Actual VOC Tons per Year = Pounds of VOC per Gallon coating (lb/gal) * Gal of Material (gal/unit) * Actual Production (units/hr) * (8760 hr/yr) * (1 ton/2000 lbs)

Particulate Actual Tons per Year = (units/hour) * (gal/unit) * (lbs/gal) * (1- Weight % Volatiles) * (1-Transfer efficiency) * (8760 hrs/yr) * (1 ton/2000 lbs)

Pounds VOC per Gallon of Solids = (Density (lbs/gal) * Weight % organics) / (Volume % solids)